SYSY Antibodies

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Monocarboxylate Transporter4 (MCT4, SLC16A3)

Cat.No. 356 405; Polyclonal Guinea pig antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 1000 up to 1 : 2000 (AP staining) **IP**: not tested yet **ICC**: not tested yet **IHC**: not tested yet **IHC-P (FFPE)**: 1 : 200 up to 1 : 1000
Immunogen	Synthetic peptide corresponding to AA 447 to 459 from rat Monocarboxylate transporter 4 (UniProt Id: O35910)
Reactivity	Reacts with: rat (O35910), human (O15427), mouse (P57787). Other species not tested yet.
Specificity	Monocarboxylate transporter 4

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

The proton-linked transport of monocarboxylates across the plasma membrane plays a critical role in the metabolism and pH regulation of most cells. Fourteen different monocarboxylic acid transporters (MCTs) have been identified, so far. Only four of them (MCT 1-4) have been shown to actively transport the monocarboxylates pyruvate and lactate across the cell membrane.
MCT 1, also referrred to as **Slc16 a1**, and MCT 2 show differential expression in astrocyte subpopulations and blood vessels in the mammalian brain.
MCT4 is highly expressed in glycolytic cells, such as skeletal muscle fibers, astrocytes, leukocytes, chondrocytes, and some mammalian cell lineages.

Selected General References

Deficiency in monocarboxylate transporter 1 (MCT1) in mice delays regeneration of peripheral nerves following sciatic nerve crush.
Morrison BM et al. Exp. Neurol. (2015) PubMed:25447940

Regulation of Mct1 by cAMP-dependent internalization in rat brain endothelial cells.
Smith JP et al. Brain Res. (2012) PubMed:22925948

Studies on the DIDS-binding site of monocarboxylate transporter 1 suggest a homology model of the open conformation and a plausible translocation cycle.
Wilson MC et al. J. Biol. Chem. (2009) PubMed:19473976

Expression of the monocarboxylate transporter MCT1 in the adult human brain cortex.
Chiry O et al. Brain Res. (2006) PubMed:16403470

Monocarboxylic acid transporters, MCT1 and MCT2, in cortical astrocytes in vitro and in vivo.
Hanu R et al. Am. J. Physiol., Cell Physiol. (2000) PubMed:10794666

cDNA cloning of MCT1, a monocarboxylate transporter from rat skeletal muscle.
Jackson VN et al. Biochim. Biophys. Acta (1995) PubMed:7548134

The role of charged residues in the transmembrane helices of monocarboxylate transporter 1 and its ancillary protein basigin in determining plasma membrane expression and catalytic activity.
Manoharan C et al. Mol. Membr. Biol. () PubMed:17127621

Access the online factsheet including applicable protocols at https://sysy.com/product/356405 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at **4°C** before reconstitution. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.